CLAIMS:

1. A method for determining a power of a laser beam which is adapted for determining a recording power of the laser beam to be projected onto a data rewritable type optical recording medium for recording data therein, which comprises steps of recording a first test signal in the data rewritable type optical recording medium while varying a level of the recording power of the laser beam, measuring, for each of the levels of the recording power of the laser beam, an amplitude A0 of a reproduced signal obtained by reproducing the first test signal before the first test signal is influenced by cross erasing of data, an amplitude A1 and jitter J1 of a reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data and an amplitude As and jitter Js of a reproduced signal obtained by reproducing the first test signal after an influence of cross erasing of data on the first test signal was saturated, calculating a first parameter for each of the levels of the recording power as a function of a difference between the amplitude A0 of the reproduced signal obtained reproducing the first test signal before the first test signal is influenced by cross erasing of data and the amplitude A1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data, calculating a second parameter for each of the levels of the recording power as a function of a difference between the amplitude A1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data and the amplitude As of the reproduced signal obtained by reproducing the first test signal after the influence of cross erasing of data on the first test signal was saturated, calculating a third parameter as a function of a difference between jitter Js of the reproduced signal obtained by reproducing the first test signal after the

influence of cross erasing of data on the first test signal was saturated and jitter J1 of the reproduced signal obtained by reproducing the first test signal after the first test signal was once influenced by cross erasing of data, obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance, thereby determining a critical parameter, recording a second test signal in the data rewritable type optical recording medium while varying a level of the recording power of the laser beam, judging whether or not signal characteristics of a reproduced signal obtained by reproducing the second test signal recorded in the data rewritable type optical recording medium satisfy reference conditions, measuring, for each of the levels of the recording power of the laser beam, when the signal characteristics of the reproduced signal obtained by reproducing the second test signal recorded in the data rewritable type optical recording medium satisfy the reference conditions, an amplitude AA0 of the reproduced signal obtained by reproducing the second test signal before the second test signal is influenced by cross erasing of data and an amplitude AA1 of the reproduced signal obtained by reproducing the second test signal after the first test signal was once influenced by cross erasing of data, calculating a fourth parameter based on the amplitudes AA0 and AA1 of the reproduced signals obtained by reproducing the second test signals as a function of a difference between the amplitude AA0 of the reproduced signal obtained by reproducing the second test signal before the second test signal is influenced by cross erasing of data and the amplitude AA1 of the reproduced signal obtained by reproducing the second test signal after the first test signal was once influenced by cross erasing of data, comparing the critical parameter and the fourth parameter, and determining the recording power of the laser beam at which the fourth parameter was

obtained as an optimum recording power when the fourth parameter is equal to or lower than the critical parameter.

2. A method for determining a power of a laser beam in accordance with Claim 1, which comprises steps of setting the power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a first track and a second track formed on the data rewritable type optical recording medium to be adjacent with each other in this order, thereby recording the second test signal thereon, reproducing the second test signal recorded on the first track, judging whether or not signal characteristics of the thus obtained reproduced signal satisfy reference conditions, changing the level of the recording power of the laser beam and recording the second test signal onto the first track and the second track formed on the data rewritable type optical recording medium to be adjacent with each other in this order when the signal characteristics of the reproduced signal do not satisfy the reference conditions, until signal characteristics of a reproduced signal obtained by reproducing the second test signal recorded on the first track satisfy the reference conditions, reproducing the second test signal recorded on the first track and measuring an amplitude of the thus obtained reproduced signal, thereby obtaining the amplitude AA1, reproducing the second test signal recorded on the second track and measuring an amplitude of the thus obtained reproduced signal, thereby obtaining the amplitude AA0, and determining the fourth parameter as a function of a difference between the amplitude AA0 of the reproduced signal obtained from the second track and the amplitude AA1 of the reproduced signal obtained from the first track.

3. A method for determining a power of a laser beam in accordance

with Claim 1 or 2, which comprises steps of setting the power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a third track, a fourth track and a fifth track formed on the data rewritable type optical recording medium to be adjacent with each other in this order, thereby recording the first test signal thereon, reproducing the first test signal recorded on the fourth track, measuring an amplitude and jitter of the thus obtained reproduced signal, thereby obtaining the amplitude A1 and the jitter J1, reproducing the first test signal recorded on the fifth track, measuring an amplitude of the thus obtained reproduced signal, thereby obtaining the amplitude A0, calculating the first parameter, directly overwriting the first test signal recorded on the third track and the first test signal recorded on the fifth track with the first test signal until an influence of cross erasing of data on the first test signal recorded on the fourth track has become saturated, reproducing the first test signal recorded on the fourth track, measuring an amplitude and jitter of the thus obtained reproduced signal, thereby obtaining the amplitude As and the jitter Js, calculating the second parameter and the third parameter, repeatedly performing the above identified steps while varying a level of the recording power of the laser beam by α within a predetermined range, and calculating the first parameter, the second parameter and the third parameter for each of the levels of the recording power of the laser beam.

4. A method for determining a critical parameter used for determining a recording power of a laser beam to be projected onto a data rewritable type optical recording medium for recording data therein, which comprises steps of setting the power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a first track, a second track and a third track formed on the data rewritable type optical recording

medium to be adjacent with each other in this order, thereby recording a first test signal thereon, reproducing the first test signal recorded on the second track, measuring an amplitude A1 and jitter J1 of the thus obtained reproduced signal, reproducing the first test signal recorded on the third track, measuring an amplitude A1 of the thus obtained reproduced signal, calculating a first parameter as a function of a difference between the amplitude A0 of the reproduced signal obtained from the third track and the amplitude A1 of the reproduced signal obtained from the second track, directly overwriting the first test signal recorded on the first track and the first test signal recorded on the third track with the first test signal until an influence of cross erasing of data on the first test signal recorded on the second track has become saturated, reproducing the first test signal recorded on the second track, measuring an amplitude As and jitter Js of the thus obtained reproduced signal, calculating a second parameter as a function of a difference between the amplitude A1 of the reproduced signal and the amplitude A10 of the reproduced signal, calculating a third parameter as a function of a difference between the jitter Js of the reproduced signal and the jitter J1 of the reproduced signal, repeatedly performing the above identified steps while varying a level of the recording power of the laser beam by α within a predetermined range, calculating the first parameter, the second parameter and the third parameter for each of the levels of the recording power of the laser beam, obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance, and determining the thus obtained value of the first parameter as a critical parameter.

5. A data rewritable type optical recording medium recorded with a

critical parameter used for determining a recording power of a laser beam, the critical parameter being determined by setting the recording power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a first track, a second track and a third track formed thereon to be adjacent with each other in this order, thereby recording a first test signal thereon, reproducing the first test signal recorded on the second track, measuring an amplitude A1 and jitter J1 of the thus obtained reproduced signal, reproducing the first test signal recorded on the third track, measuring an amplitude A1 of the thus obtained reproduced signal, calculating a first parameter as a function of a difference between the amplitude A0 of the reproduced signal obtained from the third track and the amplitude A1 of the reproduced signal obtained from the second track, directly overwriting the first test signal recorded on the first track and the first test signal recorded on the third track with the first test signal until an influence of cross erasing of data on the first test signal recorded on the second track has become saturated, reproducing the first test signal recorded on the second track, measuring an amplitude As and jitter Js of the thus obtained reproduced signal, calculating a second parameter as a function of a difference between the amplitude A1 of the reproduced signal and the amplitude A10 of the reproduced signal, calculating a third parameter as a function of a difference between the jitter Js of the reproduced signal and the jitter J1 of the reproduced signal, repeatedly performing the above identified steps while varying a level of the recording power of the laser beam by α within a predetermined range, calculating the first parameter, the second parameter and the third parameter for each of the levels of the recording power of the laser beam, and obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance.

6. A data recording apparatus storing a critical parameter used for determining a recording power of a laser beam so as to be associated with ID data for identifying a kind of an optical recording medium, the critical parameter being determined by setting the recording power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a first track, a second track and a third track formed on the data rewritable type optical recording medium to be adjacent with each other in this order, thereby recording a first test signal thereon, reproducing the first test signal recorded on the second track, measuring an amplitude A1 and jitter J1 of the thus obtained reproduced signal, reproducing the first test signal recorded on the third track, measuring an amplitude A1 of the thus obtained reproduced signal, calculating a first parameter as a function of a difference between the amplitude A0 of the reproduced signal obtained from the third track and the amplitude A1 of the reproduced signal obtained from the second track, directly overwriting the first test signal recorded on the first track and the first test signal recorded on the third track with the first test signal until an influence of cross erasing of data on the first test signal recorded on the second track has become saturated, reproducing the first test signal recorded on the second track, measuring an amplitude As and jitter Js of the thus obtained reproduced signal, calculating a second parameter as a function of a difference between the amplitude A1 of the reproduced signal and the amplitude A10 of the reproduced signal, calculating a third parameter as a function of a difference between the jitter Js of the reproduced signal and the jitter J1 of the reproduced signal, repeatedly performing the above identified steps while varying a level of the recording power of the laser beam by α within a predetermined range, calculating the first parameter, the second

parameter and the third parameter for each of the levels of the recording power of the laser beam, and obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance.

7. A data recording apparatus storing an optimum recording power of a laser beam so as to be associated with ID data for identifying a kind of an optical recording medium, the optimum recording power of the laser beam being determined by setting the recording power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a first track, a second track and a third track formed on the data rewritable type optical recording medium to be adjacent with each other in this order, thereby recording a first test signal thereon, reproducing the first test signal recorded on the second track, measuring an amplitude A1 and jitter J1 of the thus obtained reproduced signal, reproducing the first test signal recorded on the third track, measuring an amplitude A1 of the thus obtained reproduced signal, calculating a first parameter as a function of a difference between the amplitude A0 of the reproduced signal obtained from the third track and the amplitude A1 of the reproduced signal obtained from the second track, directly overwriting the first test signal recorded on the first track and the first test signal recorded on the third track with the first test signal until an influence of cross erasing of data on the first test signal recorded on the second track has become saturated, reproducing the first test signal recorded on the second track, measuring an amplitude As and jitter Js of the thus obtained reproduced signal, calculating a second parameter as a function of a difference between the amplitude A1 of the reproduced signal and the amplitude A10 of the reproduced signal, calculating a third parameter as a function of a

difference between the jitter Js of the reproduced signal and the jitter J1 of the reproduced signal, repeatedly performing the above identified steps while varying a level of the recording power of the laser beam by α within a predetermined range, calculating the first parameter, the second parameter and the third parameter for each of the levels of the recording power of the laser beam, obtaining a value of the first parameter corresponding to a value of the second parameter when the third parameter is equal to a tolerance, thereby determining a critical parameter used for determining the recording power of the laser beam, setting the recording power of the laser beam to a predetermined level, sequentially projecting the laser beam onto a fourth track and a fifth track formed on the data rewritable type optical recording medium to be adjacent with each other in this order, thereby recording a second test signal thereon, reproducing the second test signal recorded on the fourth track, judging whether or not signal characteristics of the thus obtained reproduced signal satisfy reference conditions, changing the level of the recording power of the laser beam and projecting the laser beam onto the fourth track and the fifth track formed on the data rewritable type optical recording medium to be adjacent with each other, thereby recording the second test signal thereon and reproducing the second test signal recorded on the fourth track when the signal characteristics of the reproduced signal do not satisfy the reference conditions, until the signal characteristics of the thus obtained reproduced signal has satisfied the reference conditions, reproducing the second test signal recorded on the fourth track to measure an amplitude AA1 of the thus obtained reproduced signal, reproducing the second test signal recorded on the fifth track to measure an amplitude AA0 of the thus obtained reproduced signal, calculating a fourth parameter as a function of a difference between the

amplitude AA0 of the reproduced signal obtained from the fifth track and the amplitude AA1 of the reproduced signal obtained from the fourth track, comparing the critical parameter and the thus calculated fourth parameter, and obtaining a recording power at which the fourth parameter was obtained when the fourth parameter is equal to or lower than the critical parameter.